REMARKS

The Examiner has rejected claims 1-20, and 22 on the basis of 35 USC §103(a) as being unpatentable over Maenz et al with evidence from the Vincent Corp. literature referenced therein. Applicant respectfully traverses the objection on the following basis.

The Applicant has amended independent claims 1 and 12 to more specifically define the impeller filtration step in the present invention. Applicant has cancelled dependent claims 3 and 14.

In the first step of the present invention, the impeller based passive filtration step causes the slurry to be rapidly swept across the filter medium to expel filtrate from the vessel. It does not compress the slurry; instead it sweeps the slurry over the surface of the filter media to facilitate the passive drainage of liquid through the filter media. In particular, the claims as amended recite the use of a fiber filter in step 1(b) and 12(b) which comprises a rotating paddle impeller equipped with a tubular filter screen and wherein the impeller propels and pulses the slurry against the filter medium. This is described in the description at page 4 and more specifically at page 18, Example 2 which discloses the use of a Vincent Corporation model FF-6 fibre filter. Applicant encloses an excerpt from the Vincent Corporation website entitled "Fiber Filter" for the Examiner's ease of reference, detailing this impeller driven filter.

Referring to the claim as amended and Example 2 of the description, during filtration in the first step of the present invention, the impeller propels and pulses the slurry over the inner surface of the tubular filter sleeve assembly. This results in a separation which generates a thick extract containing small fragments of cell meats and an extracted cake. The use of a fiber filter in the impeller filtration step results in highly efficient drainage and removal of viscous liquid and passage of small solid fragments. The continuous pulsing action against the filter medium prevents a phenomenon called "blinding" of the filter screen from occurring and induces a heavy flow of filtrate through the screen. Blinding occurs when the agglomeration of small solid particles combine to block the mesh apertures.

This is in contradistinction to the Traditional Horizontal Press of the Vincent Corporation literature cited by the Examiner ("Vincent Horizontal Press"). The Vincent Horizontal Press cited by the Examiner functions by way of increased volume of the impeller down the length of the chamber and imparts an outward pressure on the material in the chamber and forces the material against the filter media. The impeller filtration disclosed in the present invention does not function to create pressure within a vessel but simply imparts forward movement.

The Examiner has further asserted at the bottom of page 5 of his report, that the initial portion of the screw (left most in the figure of the Vincent document) rotates and acts as blades passing close to a filter medium (360 degrees screen) and wherein said blades sweep the material over the filter medium while minimizing compacting of the material on the screen. The Examiner is asserting that the Vincent document teaches zero pressure in the feeding section of the screw conveyor and therefore the initial portion of the Vincent Screw Press falls within "impeller filtration" as defined by the claims of the application. Applicant respectfully traverses this objection.

The initial portion of the Vincent screw press does not teach claims 1(b) and 12 (b) as amended. Under the section entitled "Feeding" paragraph 1, sentence 2 of the Vincent Corp literature cited by the Examiner, the reference states "Sometimes a rotary drum or static (sidehill) screen is mounted over the inlet hopper to thicken flow ahead of the press." The initial portion of the Vincent Horizontal Press is merely a pre-thickening step and consists of a feeder section picking up material in the inlet hopper and pushing it into the main screen part of the press. This is not the same as the impeller filtration step through a fiber filter as recited in claims 1 and 12 as amended and described and exemplified at pages 4 and 18, Example 2 of the description. The slurry is not propelled or pulsed against the filter medium in the initial portion of the Vincent Horizontal Press, as is the case with the impeller filter of the present invention.

The propelling and pulsating action of the propeller in the impeller filtration step of the present invention leads to highly efficient drainage of the slurry. In the case of the conventional screw press, such as the Vincent Horizontal Press, the drainage of liquid from the slurry, especially in this "initial portion" referenced by the Examiner, is completely inefficient and would not achieve the same end result as the present invention. With the impeller type filtration of the present

invention there is highly efficient drainage of the liquid filtrate and passage of small solid particles through the pores of the mesh due to the pulsating and propelling action and the rapid sweeping action of the impeller. The passage of the small solid particles reduces the possibility of "blinding" of the mesh apertures. However, in the case of the rotary drum or static screen of the Vincent Horizontal Press, even if the particles are small enough to pass through the screen apertures, blinding is a common occurrence and this initial portion of the screw press does not lead to the efficient drainage of the slurry. This is primarily due to the absence of a propelling and pulsating action of the slurry against the screen. As can be seen from Example 2 the impeller filtration step of the present invention results in an actual filter cake prior to undergoing compression filtration. This would simply not be possible with the initial portion of the Vincent Horizontal Press.

There is insufficient drainage for the separation of the protein components from insoluble fiber containing components to occur by use of the Vincent Horizontal Press alone. Use of the Vincent Corp Traditional Horizontal Press would not yield the same result if used in step (b) of the present invention and use of the Vincent Horizontal Press in its entirety would not yield the same result as the two step process described and claimed in the claims as amended.

After the impeller-type passive filter is used, applicant then uses a compression-type filter as a second stage. The compression-type filter compresses the material to be filtered, thereby squeezing liquid out of it through the filter. Compression filtration functions by progressively reducing the available volume within a vessel such that pressure is applied to the material within the vessel which mechanically forces liquid through the filter media of the vessel.

The Examiner has cited Maenz on the basis that Maenz discloses the use of both steps disclosed by the present invention, but in reverse order, and further the Examiner indicated that the difference in order would provide the same product with no unexpected advantage. The applicant respectfully traverses this objection. Maenz et al discloses two compression steps, rather than the passive based impeller filtration step followed by the compression filtration step of the present application which leads to significantly more efficient filtration with viscous slurries.

For the reasons set out above, applicant submits that the impeller filter of the present invention is not equivalent to the screw press disclosed by Maenz et al and the Vincent Corp literature. The screw press of Maenz et al and the Vincent Corp literature also do not have the same function as the impeller filtration step of claim 1 (b) or claim 12 (b), as amended.

The use of solely compression filtration, such as in Maenz et al, results in poor separation per unit area of filter media because of the viscous nature of the slurry. The current invention with the passive impeller filtration step in step 1 permits the use of much faster speeds in the compression filter of step 2. Moreover, the present invention would not work in the reverse order since the core of the invention is to remove the bulk of the viscous liquid by passive filtration prior to the compression filtration step.

As such, claims 1 and 12 as amended are both novel and inventive over Maenz et al and the Vincent Corp. literature. Dependent claims 2, 4-8, 10, 11 and 13, 16-17, 20, and 22 as they depend from claims 1 and 12 are also both novel and inventive for the reasons set out above.

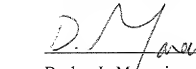
The Examiner has raised an objection to claim 21 on the basis of §103(a) on the basis that the claim is unpatentable over Maenz et al together with Heissenberger et al with evidence from Vincent Corp. literature.

The Examiner has also rejected claim 23 on the basis of §103(a) on the basis that claim is unpatentable over Maenz et al together with Uchiyama with evidence from Vincent Corp. literature.

Applicant submits that claims 21 and 23, depend from claim 12 which is both novel and inventive for the reasons set out above. As such, claims 21 and 23 are inventive over the references cited.

As such, Applicant requests early reconsideration and allowance of the present application.

Respectfully submitted,



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Enclosure: Excerpt from Vincent Corporation website "Fiber Filter"